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A Description and Economic Analysis of Large American Samoa Longline Vessels

Joseph M. O'Malley and Samuel G. Pooley

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A Description and Economic Analysis of Large American Samoa Longline Vessels

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ACKNOWLEDGMENTS

The authors thank the vessel owners, managers, fishermen and industry members for participating in the study. We also thank William A. Walsh (JIMAR/UH-Manoa); Ray Tulafono and Fini Aitaoto (American Samoa Department of Marine and Wildlife Resources); Gordon Yamasaki; Taua Tuumalo; and the rest of the National Marine Fisheries Service personnel in American Samoa; Paul Dalzell (Western Pacific Regional Fishery Management Council); David Hamm and Craig Graham (NMFS, WPacFIN); Chris King (American Samoa Department of Port Administration); and Paul Bartram.

Special thanks go to John Sibert and the University of Hawaii, Joint Institute for Marine and Atmospheric Research, Pelagic Fisheries Research Program for providing travel funds.

This project was funded by cooperative agreement #NA67RJ0154 between the Joint Institute for Marine and Atmospheric Research (JIMAR) and the National Oceanic and Atmospheric Administration (NOAA). The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subdivisions.

ABSTRACT

In 2001, 25 vessels >50 feet in overall length (big boats) joined the American Samoa longline fleet that previously had consisted of local, small catamaran-style vessels called *alias* that target albacore (*Thunnus alalunga*). The recent entrance of these modern longliners drew considerable attention due to social, economic, and fishery sustainability concerns. In order to resolve these problems a nearshore area closure was implemented and limited entry has been proposed to restrain the growth of the longliner segment of the fleet.

The objectives of this study were to describe the big boats' physical characteristics and to provide baseline economic information associated with operating a big boat in the American Samoa longline fishery. Economic information on 18 vessels was gathered by personal interviews with vessel operators, owners, or managers. All of the big boats were large modern longliners which had or were in the process of installing either a blast or a brine freezer (two vessels use icemakers), used large hydraulic reels and monofilament mainline, and were equipped with radar, GPS, VHF, SSB, temperature sensors, autopilot, and lineshooters. Annual costs were estimated to be $479,856 per vessel or $28,228 per trip. The estimated average annual albacore landing was 586,611 lb/vessel which corresponds to a net revenue in 2001, based on 17 trips annually with 14 sets per trip, of $177,207. The amount of albacore needed to 'break even' was estimated to be 424,651 lbs annually or 0.019 fish/hook at an average annual price of $2,496/ton. American Samoa fishermen overwhelmingly indicated the need for a limited entry system; however, responses to a nearshore area closure were mixed.

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1. INTRODUCTION

The American Samoa longline fleet expanded markedly in 2001. Prior to 2001, the longline fleet was comprised primarily of local catamaran *alias* (Fig. 1) targeting South Pacific albacore (*Thunnus alalunga*) for the two canneries in American Samoa and bigeye tuna (*Thunnus obesus*), yellowfin tuna (*Thunnus albacares*), skipjack (*Katsuwonus pelamis*), dolphin (*Coryphaena hippurus*), and wahoo (*Acanthocybium solandri*) for the canneries, local markets, and subsistence (Fig. 2). These vessels are generally <30 ft in overall length, powered by outboard engines, take 1- to 3-day trips, have no or limited modern technology, and generally fish <350 hooks/set with manual longline reels. During 2001, 25 modern longline vessels, known locally and therefore referred to herein as 'big boats,' entered the fishery (only three active big boats in 2000) (Fig. 3). These vessels are >50 ft in overall length, can make up to 25 sets/trip, possess modern communication and other fish finding technology, and fish approximately 3,000 hooks/set with an hydraulic longline reel. These big boats also have freezers (blast or brine) whereas the *alias* have limited fish storage capability and carry little ice. The entrance of big boats into the fleet is reflected in the abrupt increase in the number of hooks set/year and the increase in albacore catches (Fig. 4).

Figure 1. Port and stern view of typical American Samoa *alia*.

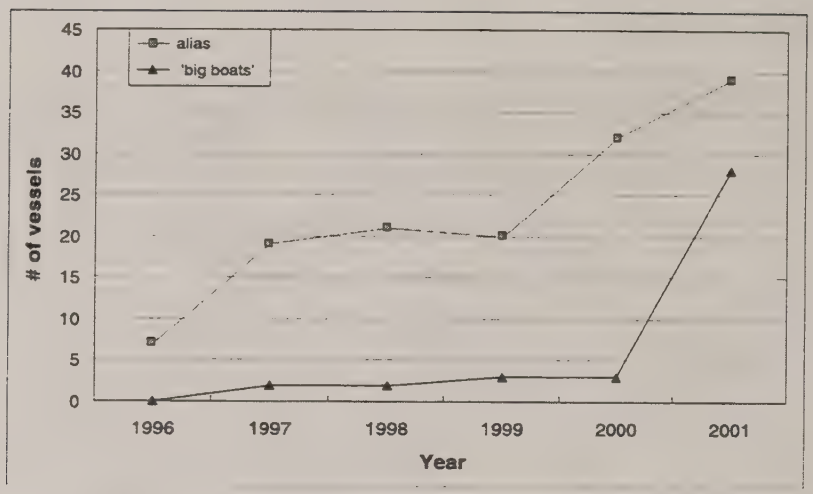

Figure 2. Number of American Samoa *alias* and big boats by year.

Figure 3. Starboard view and gear (including line shooter, radio buoys, and hook boxes) of typical American Samoa 'big boat.'

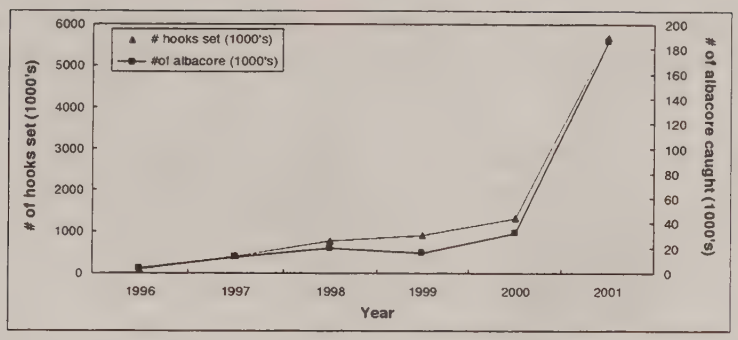

Figure 4. Annual number of hooks set (1000's) and number of albacore caught in the American Samoa longline fishery.

The sudden entrance of big boats into the American Samoa longline fleet has drawn considerable attention from fisheries managers. A number of issues arose due to this increase in fleet size and capability. The Western Pacific Regional Fishery Management Council (WPRFMC) (2000) has classified these into three topics.

1. **Gear conflicts**. Because American Samoa's exclusive economic zone (EEZ) is bordered by those of other nations and is within the South Pacific Tuna Treaty (international waters within the treaty area are closed to American longline vessels) the fleet has a restricted limited fishing area (Fig. 5). This could lead to gear conflicts among *alias* and big boats.
2. **Maintain the potential for economically viable catch rates in the small-scale fishery**. An increase in the number of hooks set in American Samoan waters has given rise to concern about the possibility of localized depletion of albacore, especially nearshore. This could severely affect the *alia* fleet and limit the potential for economically viable catch rates, especially if the *alia* fleet were to expand from a nearshore subsistence fishery to an offshore commercial fishery.
3. **Maintain cultural identity and dependence on ocean resources**. American Samoa is becoming increasingly dependent on pelagic fisheries for food, the perpetuation of Samoan culture, and local employment. The fisheries in American Samoa provide employment for people who actively fish, provide essential services to the fleets, and work in the two canneries located in Pago Pago. Reductions in fish availability or the fishing area close to the islands could seriously affect specific aspects of Samoan culture.

Two management devices have been suggested to prevent these problems. The first is a nearshore area closure (vessels >50 ft in overall length are prohibited from fishing within 50 miles of the islands of American Samoa) that went into effect on March 1, 2002. This closure is to prevent interaction between *alias* and the big boats and to preserve an area for local fishermen. The second management device, currently under consideration, is the implementation of a limited-entry system for the American Samoa longline fleet. As of March 2002, approximately 48 *alias* and 28 big boats actively longline out of Pago Pago Harbor on the main island of Tutuila.

This study will describe the big boats' physical characteristics, provide baseline economic information associated with operating these boats in the American Samoa longline fleet, and document fishermen's opinions on specific management devices and other fisheries-related issues. This information is required by the Magnuson-Stevens Fishery Conservation and Management Act[1] to allow fisheries managers to consider potential economic impacts of future regulations.

[1] SEC. 303 Contents of Fishery Management Plans 16 U.S.C. 1853 95-354, 99-659, 101-627, 104-297. (a) Required Provisions. – Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery shall—(2) contain a description of the fishery, including,...the cost likely to be incurred in management, actual and potential revenues from the fishery...

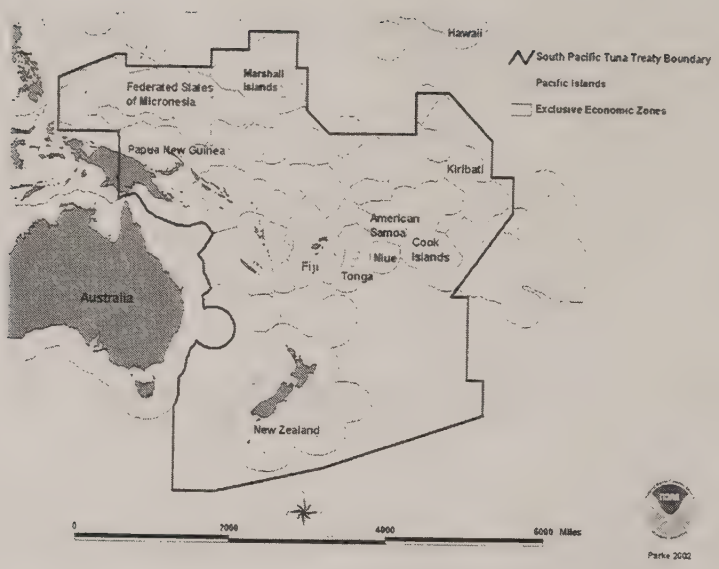

Figure 5. Exclusive Economic Zones of South Pacific Nations and boundaries of South Pacific Tuna Treaty.

2. METHODS

2.1 Data Collection

Available vessel owners, managers, or operators were personally interviewed at Pago Pago Harbor from December 5 through December 21, 2001. Any vessel in port during this time period was approached. Survey questions focused on variable costs (costs incurred when the vessel actively fishes) and fixed costs (costs incurred regardless of the number of trips the vessel takes) as well as vessel characteristics, demographics, and comments and preferences about future management alternatives (Appendix 1). Commercial fishing industry members were also interviewed, and they provided pertinent auxiliary information on the longline fleet.

Commercial logbook information, including catch and effort as well as vessel characteristics and activity, was provided by the National Marine Fisheries Service, Western Pacific Fisheries Information Network (WPacFIN) (http://wpacfin.nmfs.hawaii.edu/as/Data/Pages/as_data_main.htm).

2.2 Fishing Expenditures and Revenue Data Analysis

Only five of the 18 vessels included in the analysis fished in American Samoa throughout 2001. Based on the logbook and vessel activity data from three of these vessels (the other two had not completed a full year of logbook reports) it was estimated that a vessel could expect to make 17 trips a year. To determine annual variable costs, the trip variable cost information (e.g., fuel, bait, ice) was multiplied by 17. Based on the logbooks of the three vessels that fished all of 2001, the average number of sets/trip a vessel could expect is 14 if travel and port time are taken into consideration.

Annual repairs, although somewhat dependent on the number of trips, were considered fixed costs. Capital costs were calculated at current market rates as 7.5% of the insured value of the vessel as reported by the fishermen. The annual cost to overhaul the main engine and dry dock the vessel was determined by dividing the cost of the work by the amount of time between repairs as indicated by the fishermen.

Annual mooring costs reported by fishermen were deemed unreliable due to the wide range of responses and uncertainty of the actual cost by some fishermen. A spreadsheet of mooring charges was

acquired from the American Samoa Department of Port Administration, the department responsible for collecting mooring fees. An approximate per trip estimate of mooring costs was determined from this spreadsheet (Table 1).

Table 1. Estimated big boat mooring rates for one trip in Pago Pago Harbor, American Samoa.

Particulars	Rate ($)	Factor	Detail	Total cost ($)
Dockage	.10	per foot, per day	69-ft vessel, 3 days	20.70
Harbor movement	25	per move	5 moves*	125
Pilotage	110	base rate	entrance and departure	220
Service charge	2	base rate		2
Water	1.45	per ton		1.45
Wharfage	2	per ton	average 4 tons	8
Tonnage	1	per ton	average 4 tons	4
Total charges				**381.15**

* Based on vessel entering harbor, crossing to cannery, returning to dock, 1 misc. move, departing harbor.

Vessels carried from five to eight crewmembers including the captain. Depending on the size of the vessel and the experience of each crewmember, vessels with more experienced crews generally carried fewer hands. In American Samoa, the captain and each crewmember are paid a percentage of the net revenue, which is negotiated prior to joining the vessel. The captain's percentage ranged from 14% to 17%, and individual crew percentages ranged from 3% to 10%, depending upon experience, length of time with the vessel, and responsibilities (deck bosses and engineers received more shares). Labor costs were then calculated by deducting specific variable costs (fuel, oil, ice, bait, fishing gear, provisions) from the gross revenue. The captain's percentage (avg. = 15%) and individual crewmember percentage (avg. crew size = 5; avg. crew percentages were 6, 5, 5, 4, 3) were then determined by calculating the percentage earned from the net revenue.

Revenue information was estimated using methods similar to those employed in determining the number of expected trips per vessel/year. Revenue of the three vessels that fished all of 2001 and for which cannery landing weights were available was determined by multiplying the cannery weights by the 2001 species specific price/ton. The 2001 Forum Fishing Agency (2002) prices were used for albacore ($2,496/t), yellowfin tuna ($1,027/t) and skipjack ($776/t); and fishermen provided prices for bigeye tuna ($882/t) and wahoo ($826/t). The 2001 annual revenue of an additional eight vessels, which had fished more than 6 months but less than a full year, was estimated by determining the monthly revenue in a similar manner as described above and extrapolating to an annual expected revenue.

Because this is a developing fishery a break-even estimation, the amount of landed fish needed to match expenses, is one method of determining the level of fishing effort necessary to sustain a big boat in American Samoa. This was estimated by calculating the number of fish at the average 2001 prices that would have to be landed in order to match total 2001 costs. Because albacore is the primary target of the big boats this analysis includes only the amount of albacore necessary to meet expenses. An analysis was conducted examining the break-even point at different albacore prices.

3. RESULTS AND DISCUSSION

3.1 Interviews

Twenty-two big boats were in Pago Pago Harbor between December 5-21, 2001 and represented 79% of the fleet. A total of 18 vessels, which represented 64% of the fleet, were willing to provide information via interviews. This represented an 82% response rate for the survey.

3.2 Big Boat Vessel Description

Interviewed vessels participating in other fisheries prior to arriving in American Samoa are listed in Table 2. There was concern that the large number of vessels displaced by the 2001 swordfish fishery closure in Hawaii were going to relocate to American Samoa. However, the three vessels that left Hawaii after the swordfish fishery closure and arrived in American Samoa are under new ownership. To date, it does not appear as if the displaced Hawaii vessels relocated to American Samoa. Except for the U.S. West Coast jig vessels, all interviewed vessels are under new ownership since their arrival in American Samoa.

Table 2. Fisheries of origin for interviewed vessels entering the American Samoa longline fishery.

Previous fishery	# of Vessels	%
U.S. West Coast jig vessel (same ownership)	4	22
Hawaii longline boat	3	17
Gulf of Mexico shrimp vessel	3	17
U.S. West Coast misc.	2	11
Foreign longline vessel	2	11
Korean crab vessel	2	11
Unknown	1	6
New	1	6
Total	**18**	

All vessels classified as big boats are large modern longliners. Vessels had or were in the process of installing either a blast or a brine freezer (two vessels use icemakers); used large hydraulic reels and monofilament mainline; and were equipped with radar, GPS, VHF, SSB, temperature sensors, autopilot, and lineshooters. Specific physical and operations vessel characteristics are found in Table 3. The reported average original vessel purchase cost plus any additions needed to fish in American Samoa was $417,063 (s = $203,254).

Table 3. Physical and operational characteristics of big boats in the American Samoa longline fleet.

Characteristic	Average	Standard deviation	n
Vessel overall length (ft)	69.2	12.8	18
Vessel age (yr)	16.3	9.4	18
Main engine horsepower	457.0	199.6	15
Fuel capacity (gal)	13,056	6,320	18
Fuel/day travel (gal)	216	91	16
Cruising speed (knots)	8.4	1.3	18
Mainline length (miles)	42	11	17
Hooks/set	2,141	529	17

3.3 Annual Costs

The reported total costs were estimated at $28,228 per trip (Table 4), and total annual costs at $479,856 (Table 5). Labor was the highest cost to the American Samoa longline owner. Insurance was the highest individual fixed cost (Fig. 6) and fuel was the greatest variable cost (Fig. 7).

A cost which is unusually low in this analysis is "other repairs." This cost is meant to capture normal breakdowns such as generator, hydraulics, and autopilot malfunctions. Why this cost is so low for the interviewed vessels in American Samoa is unknown, especially considering the age of the vessels.

Table 4. The 2001 averages and standard deviations of the estimated trip revenue and fixed and variable costs of the American Samoa big boat longline fleet.

Income statement	Average (US$)	Standard deviation (US$)	N
Revenue	**38,651**	**19,972**	**11**
Fixed costs total*	**5,944**		
Capital costs	2,093	697	16
Insurance	1,561	619	15
Bookkeeping	95	85	11
Mooring**	381	0	0
Overhaul	92	53	13
Dry dock	240	158	13
Daily maintenance	805	1247	16
Other repairs in 2001	196	34	3
Misc. costs	481	214	10
Variable costs total	**11,820**		
Fuel	4,313	2,645	16
Oil	299	211	14
Ice (for non-albacore catch)	594	245	10
Bait	3,548	1,270	16
Resupply fishing gear	1,728	1,277	16
Provisions	1,338	470	16
Labor	**10,464**		
Captain's share	4,025		
Crew share+	6,439		
Total costs	**28,228**		
Net revenue	**10,423**		

*Presented as estimated trip costs if 17 trips were made.
**Estimate from Table mooring costs.
+Crew share consists of 5 crewmembers earning 6, 5, 5, 4 and 3 shares.

3.4 Revenue

The average per trip gross revenue for the average American Samoa big boat was estimated to be $38,651 (s = $19,972) with a per trip net revenue of $10,423. The annual average gross revenue was estimated to be $657,063 (s = $339,528) with an annual net revenue of $177,207.

3.5 Break-Even Points

Based on the average 2001 albacore price of $2,496/t ($1.13 price/lb) a vessel would have to land 424,651 lb of albacore to meet average annual fishing costs of $479,856. Given the average albacore weight landed by the American Samoa longline fleet is 45 lb (WPacFIN), a vessel would have to land 9,437 individual fish annually or 555 albacore per trip (based on 17 trips per year) or 40 albacore per set (based on 14 sets/trip) or 0.019 albacore per hook (based on 2,141 hooks/set). Logbook information from 10 vessels indicate that an average of 13,036 albacore were caught in 2001; therefore, the fleet was likely operating above expenses. Further analysis indicates that at the current (March 2002) price of $1,884/t, however, the fleet is barely meeting expenses and possibly only generating income through landings of incidental species. If the price continues to drop to $1,500/t the fleet will clearly be operating at a net loss (Table 6).

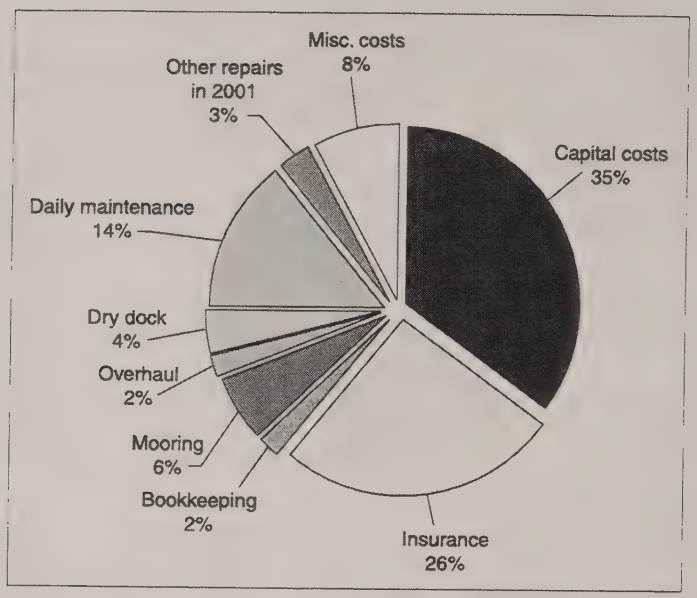

Figure 6. Percentages of individual fixed costs (total fixed costs = $101,039) for American Samoa big boats.

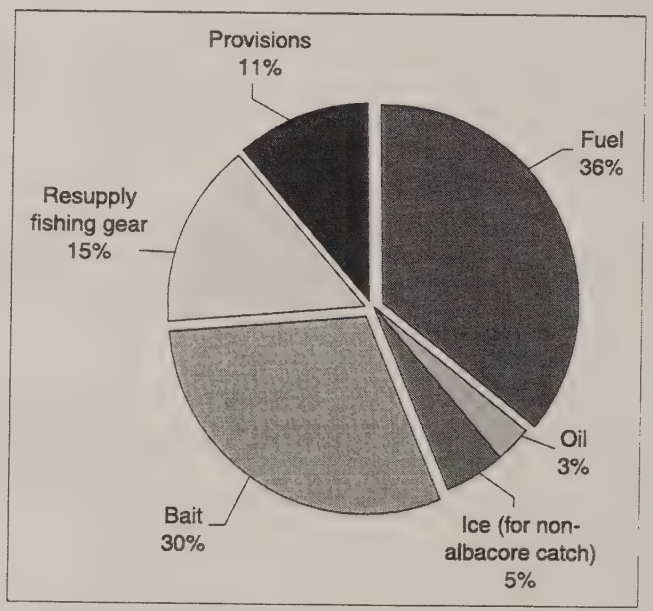

Figure 7. Percentages of individual variable costs (variable costs total = $200,923) for American Samoa big boats.

Table 5. The 2001 averages and standard deviations of the estimated annual revenue and fixed and variable costs of the American Samoa big boat longline fleet.

Income statement	Average (US$)	Standard deviation (US$)	n
Revenue	**657,063**	**339,528**	**11**
Fixed costs total	**101,039**		
Capital costs	35,578	11,856	16
Insurance	26,533	10,515	15
Bookkeeping	1,609	1,443	11
Mooring*	6,480	0	0
Overhaul	1,558	900	13
Dry dock	4,077	2,681.9	13
Daily maintenance	13,691	21,200	16
Other repairs in 2001	3,333	577	3
Misc. costs	8,180	3,643	10
Variable costs total**	**200,923**		
Fuel	73,314	44,969	16
Oil	5,085	3,588	14
Ice (for non-albacore catch)	10,090	4,165	10
Bait	60,318	21,582	16
Resupply fishing gear	29,378	21,706	16
Provisions	22,738	7995	16
Labor	**177,894**		
Captain's share	68,421		
Crew share+	109,474		
Total costs	**479,856**		
Net revenue	**177,207**		

*Estimate from Table mooring costs.
**Presented as estimated yearly costs if 17 trips were made.
+Crew share consists of 5 crewmembers earning 6, 5, 5, 4 and 3 shares.

Table 6. Break-even estimation at various cannery prices for albacore and the 2001 vessel landing averages. Needed amount and poundage are based on vessel costs of $479,856 annually.

Needed to meet expenses	Albacore price/ton			2001 Vessel Average (s) n=10
	2001 avg. ($2,496)	2002, 1st qtr. $1,884	$1,500	
Poundage	424,651	564,536	685,509	586,611 (247,661)
Individual albacore*	9,437	12,545	15,234	13,036 (5,503)
Albacore/trip**	555	738	896	767 (324)
Albacore/set+	40	53	64	55 (23)
Albacore/hook++	0.019	0.025	0.030	0.026 (0.011)

*Based on average albacore weight of 45 lb.
**Based on 17 trips/yr.
+Based on 14 sets/trip.
++Based on 2,141 hooks/set.

Calculating the 2001 revenue of the big boats in the American Samoa longline fleet is problematic for numerous reasons. While most fish are off-loaded at the cannery, a small but unknown amount is sold to local and foreign markets. Determining the revenue from those sales was impossible given the brief

duration of this project. Consequently, estimates of revenue were calculated as if all fish were landed at the canneries. Although the *alia* fishery has been operating since 1988, because the big boats are new to the fishery, this segment of the fleet may be considered developmental. Therefore, vessel catch rates during the initial phase of fleet growth may not represent the catch rates as the fleet matures. Even estimating expected individual vessels' annual catch totals, and therefore revenue, is difficult because of the majority of vessels arriving midyear.

It is important to note the seasonal variation in albacore catch rates in American Samoa (Fig. 8). Albacore are more abundant in American Samoa's waters in the second half of the year. Because a portion of the revenue calculation was based on vessels that fished only in the second half of the year, revenue information may be overestimated.

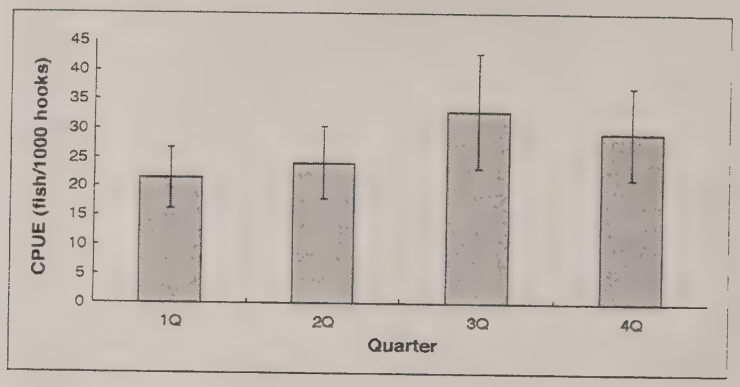

Figure 8. Mean and 95% confidential intervals of 1996-2001 quarterly albacore catch rates in American Samoa. Figure provided by WPRFMC.

3.6 Responses from Fishermen

In addition to economic queries, the owners and operators were asked open-ended questions regarding future management of the American Samoa longline fishery and future plans for the vessels. Ten fishermen responded to these questions.

3.6.1 Nearshore Area Closure

At the time of the interviews WPRFMC was considering implementation of a nearshore area closure (restriction of longline vessels >50 ft long from fishing within 50 nmi of shore). Fishermen were asked "Do you feel that the proposed nearshore area closure (waters >50 nmi from shore are closed to vessels >50 ft in length) will positively or negatively affect your operations? Why?" Ten percent of those interviewed felt the nearshore area closure would restrict the amount of fishing area available to the point of unavoidable gear conflicts among big boats. Another 10% felt a nearshore area closure was acceptable around the main island of Tutuila but did not feel the need to close the areas around Swain's Island and Rose Atoll. Forty percent had no opinion of this potential management device primarily because they do not fish within 50 nmi of land. Ten percent felt it was too late already, but they did not explain their reasoning behind this answer. Thirty percent indicated they would like to see a nearshore area closure. The reasons for this range from "If it keeps the locals happy, it makes me happy." to "It gives the local boats and local people something to grow into." It is important to note that these fishermen also indicated that they have not fished within 50 nmi of shore in the past nor do they plan to do so in the future.

3.6.2 Limited Entry

The WPRFMC is currently considering implementing a limited entry program for the American Samoa longline fleet. Numerous methods of permit allocation have been suggested (DMWR, 2001).

Fishermen were asked, "Do you feel that the number of longline vessels (big boats) in American Samoa needs to be limited? Why? What do you feel is the optimal number of vessels?" Twenty percent of the fishermen had no opinion on limited entry; ten percent felt the fishery would "take care of itself" meaning the profitable vessels would stay and those that were not would leave. The remaining 70% thought limited entry is a necessity for the fleet. Out of seven vessels, one felt that too many vessels off-loading at the canneries would result in lower prices, three were concerned about potential overfishing, and three felt there would be gear conflicts with other big boats. There was no mention of potential gear conflicts with *alias*. According to the fishermen who support implementation of a limited entry program, the average number of optimal vessels would be 37 (s = 8).

3.6.3 Development of a Sashimi-Grade Tuna Market

The primary target species of the big boats for the two canneries in American Samoa is albacore, with bigeye and yellowfin tunas caught incidentally. The 2001 cannery prices for the latter two species were $0.40/lb and $0.47/lb, respectively. Three fishermen indicated that because of this low cannery price many of these fishes were being released at sea if the fishermen felt they would survive. The fishermen also indicated that these fish could be sold as sashimi-grade fish, resulting in a much higher price than at the cannery. However, there is no infrastructure in place to effectively transport these fish to the sashimi market (e.g., Japan, U.S., Australia) because of the low number of flights out of American Samoa, the low priority of fish as cargo on those flights, and the difficulty in providing proper sashimi-grade fish while waiting for the next flight. The runway at the American Samoa airport was recently lengthened, which will allow planes with more cargo space to access American Samoa. Because of this and the resulting potential for export of sashimi-grade fish, fishermen were asked, "Do you have any plans to market fish other than albacore tuna?" Seventy percent replied that they do not have any plans to market sashimi-grade fish outside American Samoa. These fishermen overwhelmingly indicated that it would be too difficult logistically to do so. Of the remaining 30% who do market sashimi-grade fish, only one markets locally while the other two sell to buyers on the mainland U.S. and sporadically in Hawaii.

3.6.4 Long-Term Plans for the Vessel

Fishermen were also asked "Given the current circumstances in American Samoa, what are your long-term plans for the vessel?" Two fishermen were trying to sell their vessels because they were unable to meet expenses, whereas three were planning to purchase additional vessels to fish in American Samoa. Two planned to keep fishing in American Samoa indefinitely, and two also planned to keep fishing in American Samoa but placed emphasis on staying only as long as it was profitable.

3.6.5 Miscellaneous Comments

Miscellaneous fishermen's comments included frustration at recent management attempts because of too many conflicting interests, concerns that management of the American Samoa fleet will not be independent of Hawaii, and a need for better representation at the Council level. Two fishermen also commented that they would like to see the local *alia* fleet expand into something new, primarily because of safety issues. Almost all fishers complained at one point during the interview about the lack of services in American Samoa. These include finding and receiving necessary parts and the lack of skilled mechanics for electrical, mechanical, and hydraulic repairs. Three fishermen expressed an interest in longlining in other areas in the South Pacific. Two would like to see the National Marine Fisheries Service (NMFS) lobby for longlining rights in international waters within the South Pacific Tuna Treaty area (currently closed to longlining in international waters). The third was lobbying South Pacific Island countries for rights to fish within their EEZ and would like backing from NMFS.

4. SUMMARY

The big boat segment of the American Samoa longline fleet operated at an estimated net revenue of $177,207 per vessel in 2001. The estimated break-even point at the 2001 albacore price was 424,651 lbs or approximately 9,437 albacore. Logbook information from 10 vessels indicates that these vessels are landing albacore at a higher rate (586,611 lbs or 13,036 fish) than necessary to meet expenses. However, because the majority of the big boats arrived midyear when catch rates are higher, this may be an overestimation of net revenue. Future revenue will be affected by cannery prices and the potential change in catch rates as this fishery matures. Future costs may also change if parts and services become more readily available and if the service and supply industry, which the fishery depends on, also matures.

Fishermen indicated a need for some management to prevent overcapitalization of the fleet. The nearshore area closure has already gone into effect and fisheries managers are also considering limited entry, a device most of the interviewees supported. The development of an efficient system to export sashimi-grade tuna to foreign markets could significantly increase the profitability of the longline fleet.

LITERATURE CITED

Department of Marine and Wildlife Resource. Minutes of the American Samoan longline fishery. 2nd open workshop (limited entry workshop), 11-14 September 2001. Pago Pago, American Samoa.

Forum Fisheries Agency, Honiara. 2002. Tuna Market News. Annual review for 2001. Issue No. 25. 18 p.

Western Pacific Regional Fishery Management Council. Prohibition of fishing for pelagic management unit species within closed areas around the islands of American Samoa by vessels more than 50 feet in length. Framework Measure under the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region. Western Pacific Regional Fisheries Management Council, 1164 Bishop Street, Suite 1400, Honolulu, HI 96813.

Appendix A

AMERICAN SAMOA LONGLINE QUESTIONNAIRE

OWNER OPERATOR

Vessel: _____ **Flag:** _____

Date: _____

Interviewee: _____

Position: _____

VESSEL INFORMATION

1. **Year bought:** _____

2. **Purchase price:** $ _____

   Were any permits included:

   no yes

   if yes, which permits? _____

   _____

3. **Year the vessel was built:** _____

4. **Insured value of the vessel:** $ _____

5. **Vessel length and description:** _____

6. **Other fisheries the vessel has participated in (date and reason for leaving):**

   _____

   _____

   _____

   _____

7. **Ownership of vessel** *(please check)*:

   sole owner _____

   partnership with family member _____

partnership with someone outside family _____

corporation with no outside stock holders _____

corporation with outside stock holders _____

S corporation _____

leased from another owner _____

hui or other informal organization (describe) _____

other (describe) _____

This survey focuses on your operations since you have been fishing out of American Samoa, so if you can try to remember how you have operated since then it would be helpful.

8. **When did the vessel start fishing in American Samoa?**

_____

9. **How many trips has the vessel taken in American Samoa?** _____

10. **Cost of major additions (not replacements; i.e., ice maker, electronics, bigger engine, bait shack, LL gear, freezer) in order to fish in American Samoa**

$ _____ **total since purchased**

What was added and cost: _____ $ _____

LL startup costs: _____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

11. **Number and horsepower of engines:**

engine 1; horsepower _____

engine 2; horsepower _____

12. **Fuel capacity:** _____ gallons

13. **Average fuel use and speed:**

traveling:

tuna trip _____ gallons per **hour** or **day** *(please circle).*

average speed _____ knots

fishing:

tuna trip _____ gallons per **hour** or **day** *(please circle).*

FISHING GEAR

14. Number of reels aboard: _____ reels

number of reels used _____ reels

15. Do you use an icemaker? *(please circle)*

no yes

if yes, which type: saltwater

freshwater

mixed

16. Do you use a freezer? *(please circle)*

no yes

if yes, which type: brine

blast

17. Do you use:

depth sounder	_____	single sideband radio	_____
temperature sensor	_____	VHF radio	_____
direction finder	_____	cellular phone	_____
radar	_____	telex	_____
doppler	_____	comsat	_____
video plotter	_____	osam	_____
GPS	_____	weather fax	_____
HI PLOT	_____	autopilot	_____

other electronics (list) _____

_____

18. Can you estimate the total purchase price of these electronics? $ _____

19. Do you use a lineshooter in American Samoa? *(please circle)*

no yes

COST OF LONGLINE FISHING

Please answer for species you primarily targeted in American Samoa.

Approximate trip costs when targeting primary species. Please complete the following tables. Use an approximate average since you have been in American Samoa.

20. What is your primary target in American Samoa? _____

21. Fuel, engine oil, and ice used on a typical trip when targeting primary species:

	price	# per trip	total cost
fuel	avg. $ _____ gallon max. $ _____ gallon	gallons	$ _____
engine oil	avg. $ _____ gallon max. $ _____ gallon	gallons	$ _____
ice	$ _____ per 300 lb block	blocks	$ _____

22. Bait for typical trip when targeting primary species:

	price	# per case	cases per trip	total cost
Bait type 1	$ _____ case			$ _____
Bait type 2	$ _____ case			$ _____

Fishing Gear Costs For Primary Target Species

23. What is the average cost to resupply your fishing gear for each trip in American Samoa (hooks, branch lines, swivels, snaps, weights, leaders, floats, dye, gloves, boots, gaffs, etc...).

cost per trip $ _____

24. Where do you purchase most of your fishing supplies in American Samoa?

_____

25. Do you process any of the fish in a way that has an extra cost (i.e., bags, shipping boxes, shipping charges)?

no yes

if yes, what was used to process the fish: _____ $ _____

26. Food cost per fishing trip: $ _____

Labor Costs

In the following questions the terms 'share' and 'percentage' (%) are generally interpreted as the same concept--part of the revenue from a fishing trip goes towards the crew. This is in contrast to 'flat rate' ($) which is when a crewmember earns the same amount of money regardless of the revenues from a fishing trip.

27. If you use the share or percentage method, is the % derived from the net or gross revenue of the trip *(please circle)*?

net gross

If you circled net, which of the follow expenses were subtracted from your gross revenue before calculating the crew share *(please check all that apply)*?

food _____ auction fees _____

fuel and oil _____ gear replacement _____

ice and bait _____

other _____

28. How many crewmembers are aboard a typical fishing trip (besides captain)?

_____ crew members.

29. How are the captain and crewmembers paid? Please fill in the following table:

	pay	**extra duty? (i.e., engineer, cook)**
captain	_____ **$ or %**	
1st mate/deck boss	_____ **$ or %**	
crew member 1	_____ **$ or %**	
crew member 2	_____ **$ or %**	
crew member 3	_____ **$ or %**	
crew member 4	_____ **$ or %**	
crew member 5	_____ **$ or %**	

30. Does the crew receive bonuses?

no yes

if yes, please describe _____

31. Do you use foreign (contracted) crewmembers? *(please circle)*

no yes

if yes, what are some of the expenses, besides salary, to retain a contracted crewmember?

_____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

32. On days when you were fishing, about how many hours per day did the crew work?

_____ hours per day.

33. While in port how many total hours did each crewmember normally work unloading, cleaning, repairing, and reloading the boat?

_____ hours.

34. What percentage of revenue went to the owner? _____**%**

Is this percentage from the net or the gross revenue? *(please circle)*

net gross

Other Costs

Travel to Mainland

35. Has this vessel traveled to the U.S. mainland since it entered the American Samoa LL fishery?

no yes

if yes, then why_____

if yes, did the vessel fish on the way to and back from the mainland? *(please circle)*

no yes

if yes, what were the extra costs associated with traveling to the mainland (i.e., fuel, dock fees, etc...)?

_____ $ _____

_____ $ _____

Repairs

36. When was the last time the engine was overhauled? _____

cost $ _____

37. What were other repairs and their costs since you have been in American Samoa? *(please list)*

_____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

total costs of repairs $ _____

38. Dry dock:

When did you last go? _____

How often do you go? Once every _____ years.

How much did it cost for your boat the last time you went? (scrape, zinc and paint only, not the repairs covered above). $ _____

39. How much is spent on daily maintenance of vessel? **annual** or **trip** *(please circle)*

$ _____

What were some of these costs for:

_____

_____

40. Mooring fees in American Samoa:

$ _____ per **day** or **month** *(please circle).*

41. Insurance costs per month:

$ _____

This includes *(please check)*:

vessel and liability _____

vessel (hull) only _____

liability ("P and I") _____

health (specify who is covered) _____

vessel, liability, and health _____

42. Bookkeeping/accounting costs:

$ _____ per **month** or **year** *(please circle)*

43. Boat loan payments per month:

$ _____

How much time is left on this loan? _____ months or **years** *(please circle)*

44. Are there any additional vessel costs?

no yes

if yes, please list: communications (sat phone, email, etc) $ _____

_____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

FISH SALES

45. Where do you sell your fish in American Samoa? Is there a fee? How much?

_____

_____

_____

_____

MISCELLANEOUS QUESTIONS

46. Average trip length: _____ days

47. Given the weather and stock conditions that existed, would you like to have taken more trips or fished more days than you have in American Samoa?

no yes

If you wanted to fish more, what are the reasons why you didn't? *(please check all that apply)*:

breakdowns _____

other jobs _____

fishing in other fishery _____

other *(please list)* _____

_____

_____

If not for the reasons you just mentioned, how many more trips would you like to have taken (or more days fished) in American Samoa?

_____ extra trips _____ extra days fished or _____ extra days per trip

48. Would you sell this vessel if you could?

no yes

if yes, why haven't you? _____

_____

49. What do you estimate you could sell the boat for?

without the permit $ _____; where _____

with the permit $ _____; where _____

50. What are your main reasons for staying in the American Samoa longline fishery (vs. other fisheries)? *(please check top five reasons)*:

enjoy American Samoa lifestyle/weather _____

this is what I know how to do _____

long-term family tradition _____

cost of converting vessel would be too high _____

operating costs would be too high _____

other fisheries unattractive due to regulation _____

cost of relocating would be too high _____

enjoy catching tuna over other species _____

have family here _____

market is steady here _____

there are a lot/enough fish here _____

too risky to switch _____

all other fisheries are depleted _____

other *(please describe)* _____

_____

_____

RECENT RULINGS AND MANAGEMENT DECISIONS

51. How has the recent ruling on shark finning affected your operations, specifically economically?

52. Do you feel that the proposed nearshore area closure (waters <50 nmi from shore are closed to vessels 50 ft long) will positively or negatively affect your vessel? Why?

53. Do you feel that the number of longline vessels in American Samoa needs to be limited? Why (potential overfishing, gear conflict, other…)? What do you feel is the optimal number of vessels?

54. Do you have plans to market fish other than albacore tuna?

55. Given the current circumstances, what are your long-term plans for the vessel (i.e., move to other fisheries, sell the boat, stay in American Samoa)?

EXPERIENCE/DEMOGRAPHICS

56. How many years have you been fishing commercially (any kind)? _____ years

57. How many of those were longlining? _____ years

58. How many of those years longlining were as captain? _____ years

59. How many of those years were as a longline captain in American Samoa? _____ years

60. How long have you captained this vessel? _____ **years** or **trips** *(please circle)*

61. Do you own other fishing vessels besides this one?

no yes

If yes, what fisheries are they involved in? *(please list)*

_____

_____

62. Does your vessel(s) work with other vessels other than your own?

no yes

63. What percentage of your family's total income came from the boat?

_____ %

If less than 100% what were the other sources of income for your family? *(please list)*

_____

_____

_____

64. Would you say that you made a reasonable living (or return) operating this fishing vessel in American Samoa?

no yes

65. What year were you born? _____

66. Were any of your close relatives commercial fishermen?

no yes

if yes, whom: please list relation _____

_____

_____

_____

_____

67. Do you live in American Samoa?

no yes

where? _____ **how long?** _____ years

68. How do you describe your ethnic background? _____

69. Is there anything else you would like to say? For example:

What do you think would be the best way to manage the longline fishery? What would you like the Council or NMFS to do? How would you like to see things change?

Western Pacific
Regional Fishery
Management Council

University
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